

**VIRGINIA
STANDARDS OF LEARNING ASSESSMENTS**

Spring 2002 Released Test

**GRADE 8
MATHEMATICS**

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DIRECTIONS

Read and solve each question. Then mark the space in the answer booklet for the best answer.

SAMPLE

Vicki had \$228 in her checking account. She used \$37 to buy a birthday gift for her grandmother. After that, how much did she have left in her checking account?

- A \$211
- B \$191
- C \$181
- D \$164

1 How many factors does a prime number have?

- A 0
- B 1
- C 2
- D 3

2 Which of the following is *not* true?

F $\frac{2}{5} = 0.4 = 40\%$

G $\frac{7}{10} = 0.7 = 70\%$

H $2\frac{1}{2} = 2.5 = 25\%$

J $3\frac{3}{8} = 3.375 = 337.5\%$

3 $72 - (7 + 8) \cdot 4$ is equivalent to —

- A 292
- B 260
- C 87
- D 12

4 Linda is keeping a record of her scores and entered these statistics after her first basketball game.

Linda's Basketball Statistics

Field Goals Attempted	Field Goals Made	Points from Field Goals	Free Throws Attempted	Free Throws Made	Points from Free Throws	Total Points
12	8	16	6	4	4	20

What was the ratio of field goals made to field goals attempted?

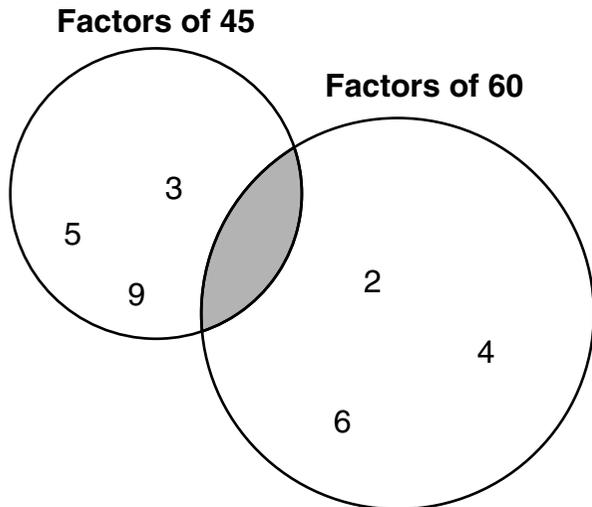
F $\frac{1}{2}$

G $\frac{2}{3}$

H $\frac{3}{4}$

J $\frac{3}{2}$

- 5 Loretta is filling numbers in the Venn diagram. No number is to be entered more than once.



What is the greatest number that can be appropriately placed in the shaded area of the diagram?

- A 5
B 10
C 15
D 180
- 6 Which is an integer?
- F -19
G 1.5
H $\sqrt{2}$
J $\frac{1}{3}$

- 7 Harold was looking at a scale drawing of a city park. A reflection pool 27 meters long measured 1.8 centimeters on the drawing. Which is most likely the scale used to make the drawing?

- A 1 cm represents 9 m
B 1 cm represents 12 m
C 1 cm represents 15 m
D 1 cm represents 18 m

- 8 If $a + b = a$, then b equals —

- F -1
G 0
H 1
J $-a$

9 Between what two consecutive whole numbers does $\sqrt{95}$ lie?

- A 7 and 8
- B 8 and 9
- C 9 and 10
- D 10 and 11

10 A recipe calls for $3\frac{1}{4}$ cups of flour and $1\frac{1}{2}$ cups of sugar. If the recipe is doubled, how much flour will be required?

- F 3 cups
- G $3\frac{1}{4}$ cups
- H $4\frac{3}{4}$ cups
- J $6\frac{1}{2}$ cups

11 David earns \$9.60 per hour for a 40-hour week. What was his net pay for a week in which his total deductions were \$84.30?

- A \$93.90
- B \$299.70
- C \$315.70
- D \$384.00

12 Mark layered 3 pieces of wood to build the base for a lamp. The pieces were $\frac{1}{4}$ inch thick, $\frac{5}{8}$ inch thick, and $\frac{3}{16}$ inch thick. How thick was the base for the lamp?

- F $\frac{7}{16}$ in.
- G $\frac{9}{16}$ in.
- H $\frac{15}{16}$ in.
- J $1\frac{1}{16}$ in.

13 What is the value of $n^2(m + r)$ if $m = 3$, $n = 2$, and $r = 4$?

- A 28
- B 16
- C 14
- D 9

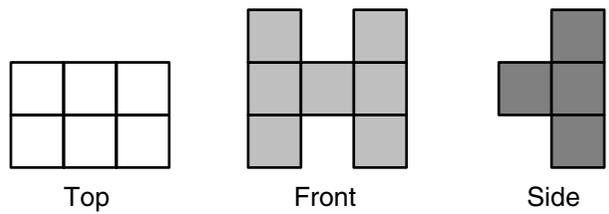
14 At the video rental shop, 5 movies can be rented for \$6.99. Each additional movie rental is \$1.99. What would be the total cost of renting 8 movies?

- F \$12.96
- G \$13.98
- H \$15.92
- J \$25.87

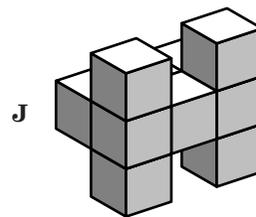
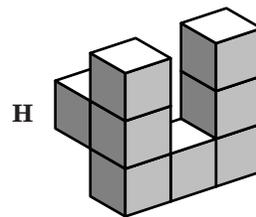
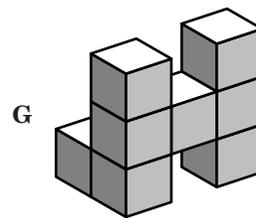
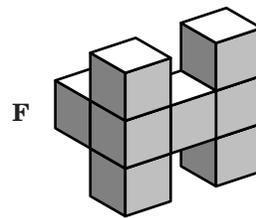
15 What is the value of $\frac{y^2}{5} + y^2 - 12$,
when $y = 5$?

- A 13
- B 16
- C 18
- D 22

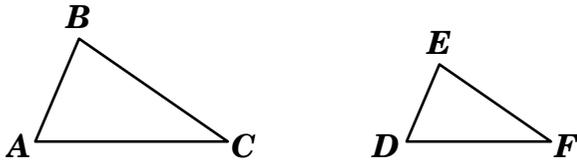
16 This shows 3 different views of a
three-dimensional figure made from
cubes.



Which could be a drawing of the
figure?



17



If $\triangle ABC$ is similar to $\triangle DEF$, which of the following must be true?

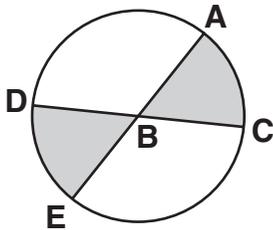
A $\frac{AB}{AC} = \frac{DE}{EF}$

B $\frac{AB}{DF} = \frac{AC}{EF}$

C $\frac{AB}{BC} = \frac{DE}{DF}$

D $\frac{AB}{DE} = \frac{AC}{DF}$

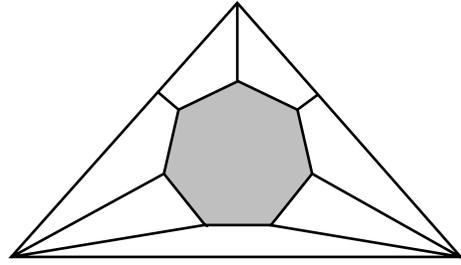
18 Section ABC and section EBD of the flower garden contain roses. \overline{AE} and \overline{CD} are straight line segments.



If $\angle ABC$ measures 38° , what is the measure of $\angle EBD$?

- F 38°
- G 52°
- H 90°
- J 142°

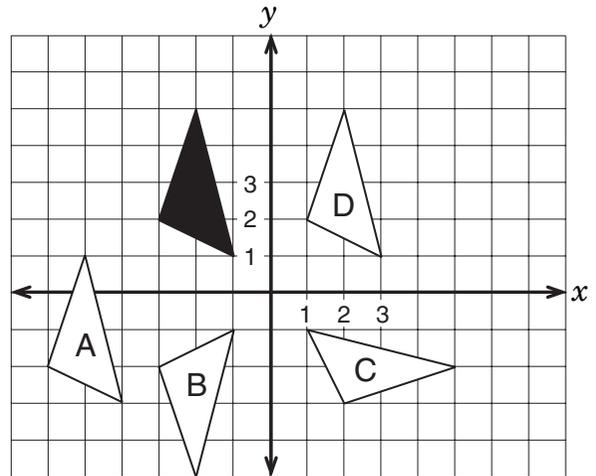
19 Look at the design below.



Which term identifies the shaded part in the center of the design?

- A Heptagon
- B Pentagon
- C Nonagon
- D Decagon

20



Which white triangle shows where the black triangle would be if reflected across the x -axis?

- F A
- G B
- H C
- J D

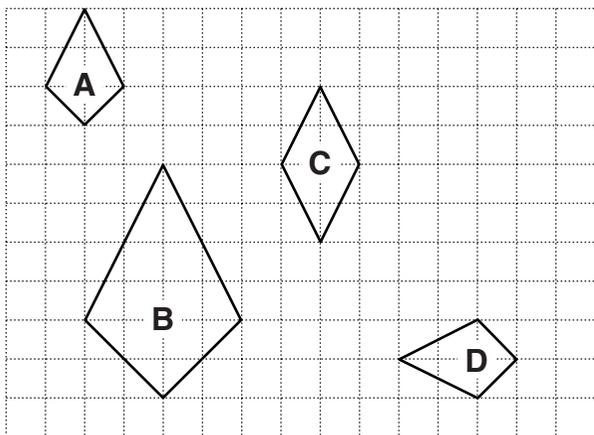
21 Which of the following indicates the greatest weight?

- A 600 pounds
- B 0.25 tons
- C 9,000 ounces
- D 0.5 tons

22 Su Li wants to place a protective covering over a rectangular flower bed that measures 3.2 meters by 4.3 meters. How many square meters of covering will she need?

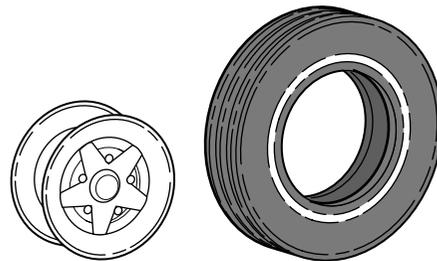
- F 7.5
- G 13.76
- H 15.0
- J 27.52

23 Which figures appear to be congruent?



- A A and B
- B B and D
- C C and D
- D D and A

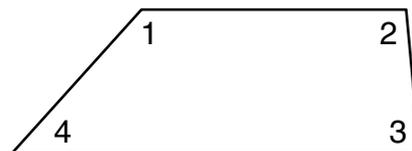
24 The wheel rim has a diameter of 15 inches.



Which is *closest* to the inside circumference of the tire designed to fit on the rim?

- F 47.1 in.
- G 94.2 in.
- H 176.6 in.
- J 706.5 in.

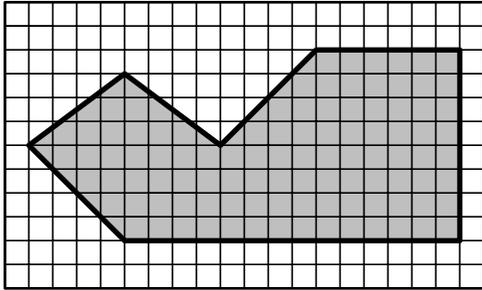
25 Look at the angles in this quadrilateral.



Which angle measure is closest to 48° ?

- A $\angle 1$
- B $\angle 2$
- C $\angle 3$
- D $\angle 4$

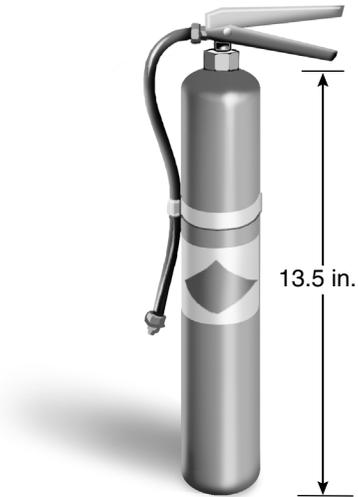
- 26 A grid is placed over a cross-sectional drawing of a molding. Each square of the grid represents one square centimeter.



How many square centimeters are contained in the area of the cross section?

- F 44
- G 96
- H 108
- J 208

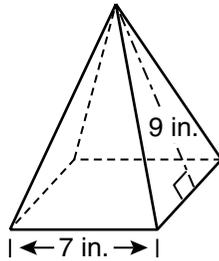
- 27 The cylindrical cannister of this fire extinguisher has a radius of 2.5 inches and is 13.5 inches high.



Which is *closest* to the number of cubic inches it will hold when filled?

- A 1,060
- B 265
- C 212
- D 115

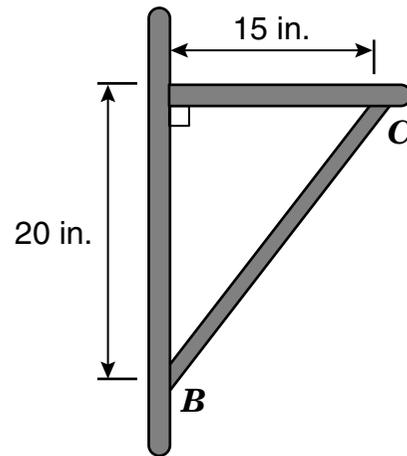
- 28 As part of an art project, Billy has to paint the surface area of a square-based pyramid. The pyramid has the dimensions shown.



What is the total surface area of the pyramid?

- F 441 sq in.
- G 301 sq in.
- H 252 sq in.
- J 175 sq in.

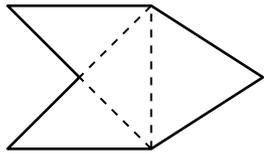
- 29 This is a cross section of the design of a bookshelf.



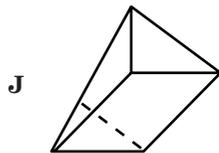
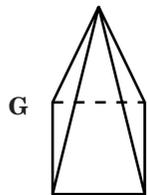
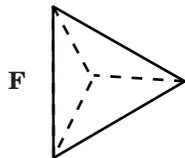
Which is closest to the length, in inches, of the brace indicated by \overline{BC} in the sketch?

- A 25 in.
- B 30 in.
- C 32.5 in.
- D 35 in.

- 30 This net represents the surface area of a solid figure.



Which drawing represents the figure?



- 31 The chart shows the pizza menu for the local pizza parlor.

Pizza		
Size	Crust	Toppings
Small	Thin Original Thick	Pepperoni
Medium		Hamburger
Large		Cheese
Extra Large		Sausage

Which of the following shows the total number of ways Andy can buy a pizza with one topping?

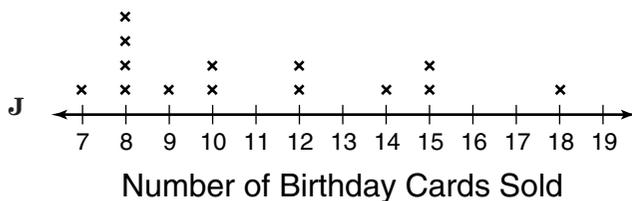
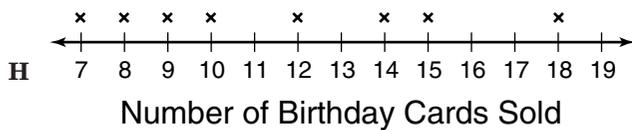
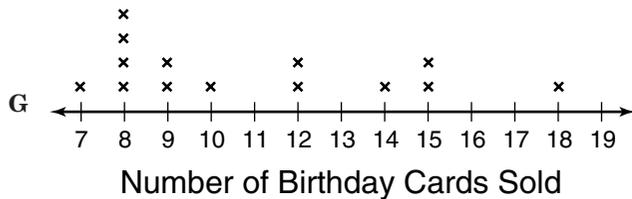
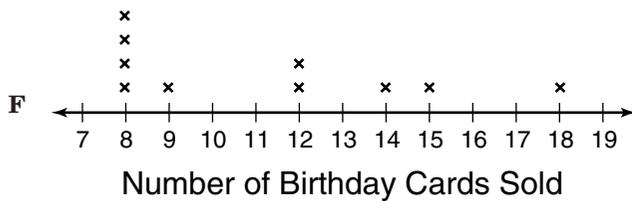
- A $4 + 3 \times 4$
 B $4 \times 3 \times 4$
 C $(4 \times 3) + (4 \times 3)$
 D $(4 \times 4) + 3$

- 32 The table shows the number of birthday cards a shop sold each day in a two-week period.

Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
15	8	9	8	10	12	18

Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
7	9	8	12	8	15	14

Which line plot displays this information?



- 33 The stem-and-leaf plot shows the highest January temperature in degrees Fahrenheit for 10 U.S. cities.

Stem	Leaf
3	7, 8, 9
4	2, 2, 6, 7
5	3, 4
6	0

In how many cities is the highest January temperature above 45 degrees Fahrenheit?

- A 4
B 5
C 6
D 7

- 34 Three clubs participated in a fundraiser. Club A sold 128 candy bars and 56 drinks. Club B sold 78 candy bars and 89 drinks. Club C sold 97 candy bars and 123 drinks. Which matrix *best* organizes and displays the data?

F

Club	Candy	Drinks
A	128	56
B	97	123
C	78	89

G

Club	Candy	Drinks
A	78	89
B	97	123
C	128	56

H

Club	Candy	Drinks
A	78	89
B	128	89
C	97	123

J

Club	Candy	Drinks
A	128	56
B	78	89
C	97	123

- 35 On your first draw, what is the probability of drawing a red card, without looking, from a shuffled deck containing 6 red cards, 6 blue cards, and 8 black cards?

- A 10%
- B 20%
- C 30%
- D 40%

36 A package contains 7 bags of tortilla chips, 3 bags of cheese puffs, 4 bags of potato chips, and 6 bags of corn chips. If Steve reaches into the package and selects one bag without looking, what is the probability he will choose potato chips?

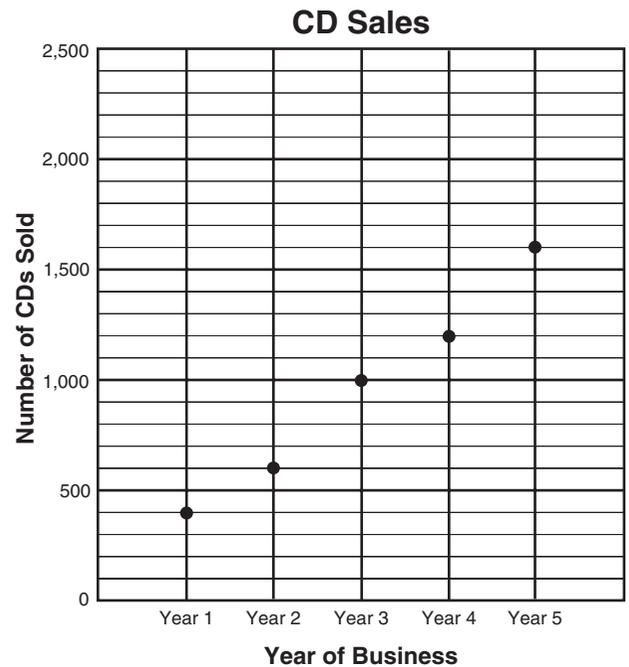
F $\frac{2}{20}$

G $\frac{1}{5}$

H $\frac{3}{10}$

J $\frac{7}{20}$

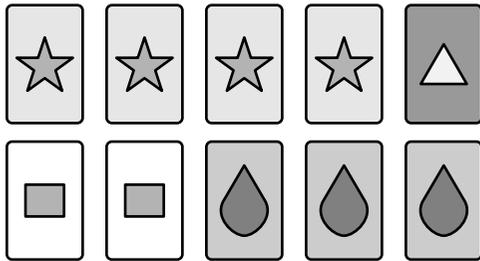
37 The graph shows the number of CDs sold each year at a small music store.



If the number of CDs sold each year continues to increase as shown in the plot, which is the *best* prediction of the number of CDs the store will sell during its 8th year of business?

- A 3,400
- B 3,000
- C 2,400
- D 2,000

- 38 These cards are used to play a game between two players.



If Sally draws one card at random, what is the probability it will be a card with a star?

F $\frac{2}{5}$

G $\frac{3}{10}$

H $\frac{1}{5}$

J $\frac{1}{10}$

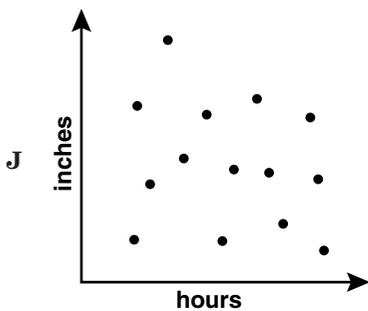
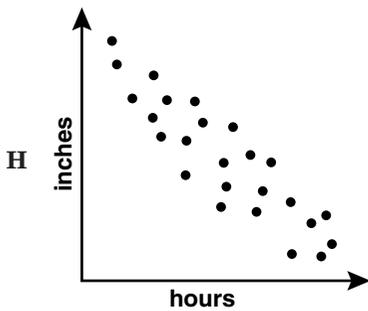
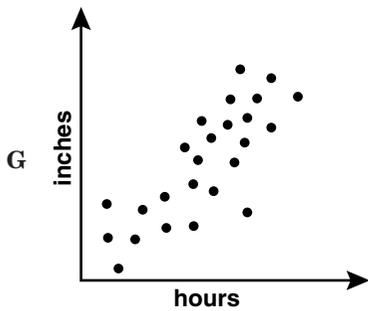
- 39 Soccer is the world's most popular sport. The table lists the records of 5 World Cup winners.

Country	Games Won	Games Lost	Ties	Total Points
Argentina	24	15	9	57
Brazil	44	11	11	99
England	18	11	12	48
Italy	31	11	12	74
West Germany	39	14	15	93

What was the mean number of total points scored by these teams?

- A 51
B 74
C 74.2
D 99

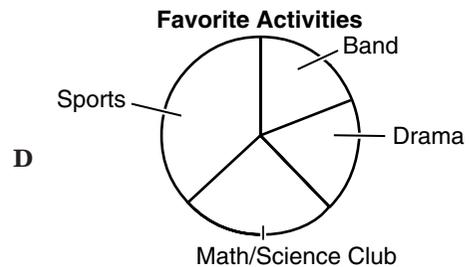
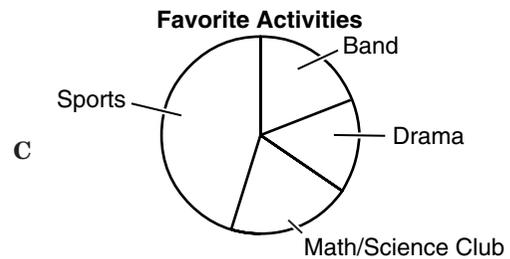
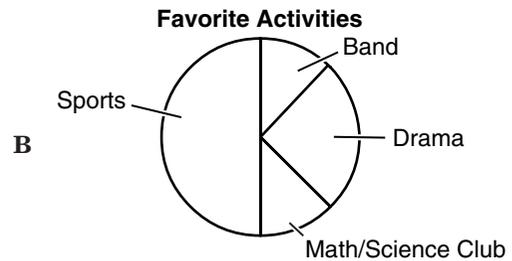
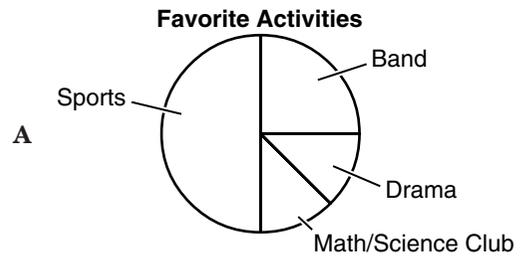
40 Which scatterplot best shows the relationship between a person's height and the time that person spends watching television?



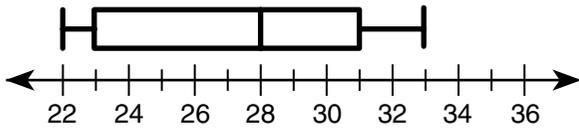
41 Harry asked several classmates to name their favorite after-school activity and showed the results in this table.

Activity	Number of Students
Band	12
Drama	6
Math/ Science Club	6
Sports	24

Which graph correctly displays this information?



- 42 The box-and-whisker plot shows the class sizes in 15 schools.

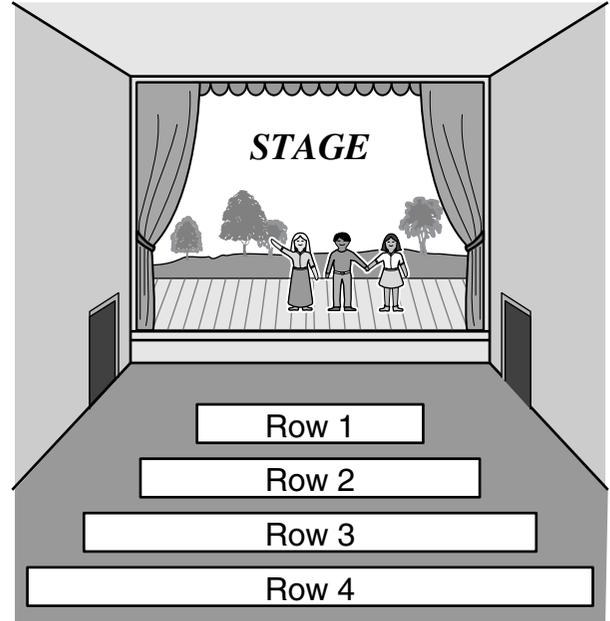


Which statement concerning the class sizes *must* be true?

- F The range of size is 8.
 G The largest class is 31.
 H Half of the classes are larger than 23.
 J The median class size is 28.
- 43 Hilary has \$9 less than Barbara. Together they have \$21. If x represents Barbara's money, which of the following expresses this relationship?

- A $(x + 9) + x = 21$
 B $(x - 9) + x = 21$
 C $x - 9 = 21 + x$
 D $x = 21 + x - 9$

- 44 In the center section of an auditorium, each row has 2 more seats than the row in front of it.



The front row of the section contains 23 seats. How many seats are in the 10th row from the stage?

- F 33
 G 39
 H 41
 J 43
- 45 What value of c makes the sentence $5(c - 0.15) = 2.50$ true?

- A 0.47
 B 0.53
 C 0.63
 D 0.65

- 46 The sonar system of a submarine receives an echo back from a ship 5,000 yards away after 6.1 seconds. It picks up an echo from a second ship after 8.4 seconds. Which proportion could be used to find the distance to the second ship?

F $\frac{6.1}{5000} = \frac{8.4}{x}$

G $\frac{6.1}{8.4} = \frac{x}{5000}$

H $\frac{8.4 - 6.1}{8.4} = \frac{x}{5000}$

J $\frac{2.3}{5000} = \frac{6.1}{x}$

47

$$3y = (7x - 9)$$

Which best describes the circled portion of the equation?

- A expression
 - B variable
 - C term
 - D coefficient
- 48 There are 48 newborn girls in a hospital nursery. For every 3 girls there are 2 boys. How many newborn boys are in the nursery?
- F 72
 - G 48
 - H 32
 - J 24

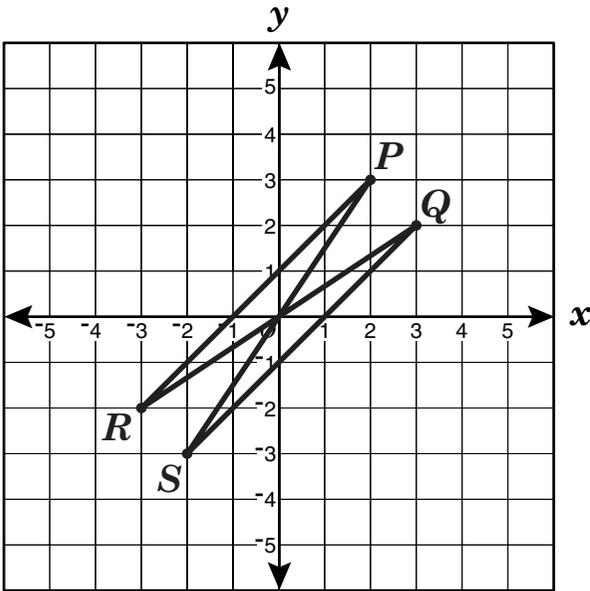
- 49 Elizabeth drove 432 miles on the second day of a trip, which was 17 miles more than five times as far as she drove on the first day. How many miles did she drive on the first day?

- A 61
- B 83
- C 84
- D 90

- 50 The number of diagonals that can be drawn in a polygon with n sides can be determined by $\frac{n(n-3)}{2}$. How many diagonals can be drawn in a polygon with 10 sides?

- F 130
- G 70
- H 65
- J 35

51



Which line segment connects (2, 3) and (-3, -2)?

- A \overline{PQ}
- B \overline{PR}
- C \overline{QS}
- D \overline{RS}

52 The table shows the relationship between d , the number of days a library book is overdue, and f , the amount of the fine.

d	1	2	3	4	5
f	\$0.05	\$0.10	\$0.15	\$0.20	\$0.25

Which of the following describes the relationship?

- F $f = 0.05d$
- G $f = d + 0.05$
- H $f = 2d + 0.05$
- J $f = (d + 2)0.05$

53 Which table contains only values that satisfy $y = 3x - 5$?

A

x	y
2	1
0	-2
2	-11

B

x	y
1	2
3	4
5	10

C

x	y
-3	-14
0	-5
3	4

D

x	y
-5	-15
0	-5
5	0

54 Martha's grandfather at 63 years of age is 6 years more than 3 times as old as Martha. What is Martha's age?

- F 17
- G 19
- H 21
- J 23

55 What is the solution to $\frac{x + 5}{30} = 12$?

- A $x = 72$
- B $x = 355$
- C $x = 365$
- D $x = 1,800$

56 Which of these is an inequality?

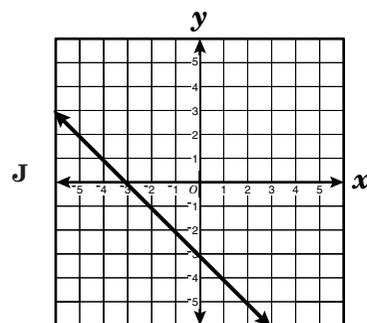
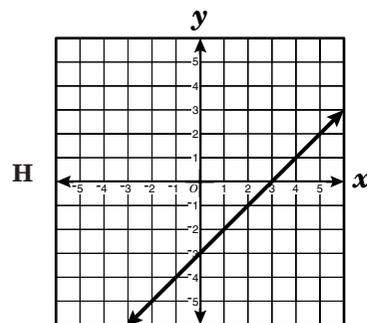
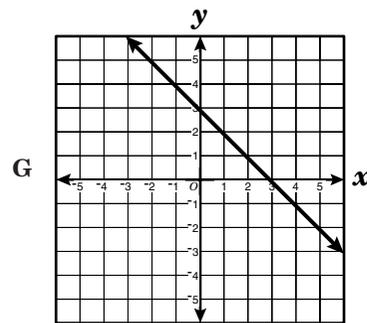
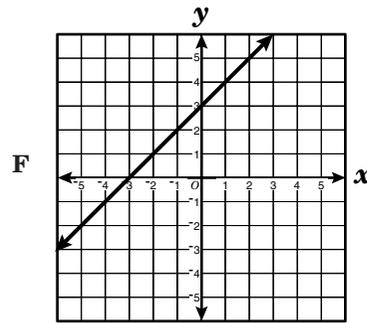
- F $4x = 5y$
- G $3x - 6 = 12$
- H $x^2 - 3x + 4$
- J $3x < x - 2$

57 twice the number of books divided by fifteen

Which represents the phrase in the box?

- A $\frac{15n}{2}$
- B $\frac{2n}{15}$
- C $\frac{2 + n}{15}$
- D $\frac{n}{2(15)}$

58 Which best represents the graph of $y = x + 3$?



59 Which is a solution for $5x + 2 = 9x - 4$?

A $\frac{3}{2}$

B $\frac{2}{3}$

C $-\frac{2}{3}$

D $-\frac{3}{2}$

60

n	2	3	4	5	6
n^2	4	9	16	25	36

Which *best* describes the value of $(4.5)^2$?

F Between 4 and 9

G Between 9 and 16

H Between 16 and 25

J Greater than 25



Answer Key

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
1	C	005	Number and Number Sense
2	H	005	Number and Number Sense
3	D	005	Number and Number Sense
4	G	005	Number and Number Sense
5	C	005	Number and Number Sense
6	F	005	Number and Number Sense
7	C	005	Number and Number Sense
8	G	005	Number and Number Sense
9	C	006	Computation and Estimation
10	J	006	Computation and Estimation
11	B	006	Computation and Estimation
12	J	006	Computation and Estimation
13	A	006	Computation and Estimation
14	F	006	Computation and Estimation
15	C	006	Computation and Estimation
16	J	007	Measurement and Geometry
17	D	007	Measurement and Geometry
18	F	007	Measurement and Geometry
19	A	007	Measurement and Geometry
20	G	007	Measurement and Geometry
21	D	007	Measurement and Geometry
22	G	007	Measurement and Geometry
23	D	007	Measurement and Geometry
24	F	007	Measurement and Geometry
25	D	007	Measurement and Geometry
26	H	007	Measurement and Geometry
27	B	007	Measurement and Geometry
28	J	007	Measurement and Geometry
29	A	007	Measurement and Geometry
30	F	007	Measurement and Geometry
31	B	008	Probability and Statistics
32	G	008	Probability and Statistics
33	B	008	Probability and Statistics
34	J	008	Probability and Statistics
35	C	008	Probability and Statistics
36	G	008	Probability and Statistics
37	C	008	Probability and Statistics
38	F	008	Probability and Statistics
39	C	008	Probability and Statistics
40	J	008	Probability and Statistics
41	A	008	Probability and Statistics
42	J	008	Probability and Statistics
43	B	009	Patterns, Functions, and Algebra
44	H	009	Patterns, Functions, and Algebra
45	D	009	Patterns, Functions, and Algebra

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
46	F	009	Patterns, Functions, and Algebra
47	A	009	Patterns, Functions, and Algebra
48	H	009	Patterns, Functions, and Algebra
49	B	009	Patterns, Functions, and Algebra
50	J	009	Patterns, Functions, and Algebra
51	B	009	Patterns, Functions, and Algebra
52	F	009	Patterns, Functions, and Algebra
53	C	009	Patterns, Functions, and Algebra
54	G	009	Patterns, Functions, and Algebra
55	B	009	Patterns, Functions, and Algebra
56	J	009	Patterns, Functions, and Algebra
57	B	009	Patterns, Functions, and Algebra
58	F	009	Patterns, Functions, and Algebra
59	A	009	Patterns, Functions, and Algebra
60	H	009	Patterns, Functions, and Algebra